Less utilized prognostic markers in acute myeloid leukemia

ABSTRACT

Acute myeloid leukemia (AML) results from the over-proliferation of progenitor cells of the myeloid lineage in the bone marrow. It is a heterogeneous disease that is aggressive and difficult to treat. AML diagnosis is based on clinical as well as laboratory investigations. Risk stratification is important to assess risk of relapse. Current guidelines for risk stratification are dependent on identification of genetic aberrations particularly chromosomal translocations and gene mutations. Though these are observed in the majority of patients, the best treatment regimen remains elusive. AML blasts are assumed to have transformed from a normal counterpart and maintains many normal regulatory functions. Early features such as stem cell properties has long been proven to be linked to early relapse in AML. Leukaemia stem cells (LSC) are identified by high CD34 and negative CD38 expression. Aberrant expression of a third marker such as Thy-1/CD90 negativity, expression of CLL-1 and IL-3R (CD123), intermediate levels of aldehyde dehydrogenase and co-expression of common chromosomal translocation may be used to distinguish from normal hematopoietic stem cells. In vitro characteristics of AML blasts such as proliferation, survival or response to treatment are also able to predict patient response to therapy, replicative of its interaction with the microenvironment. These potential prognostic markers are well studied but are currently not considered in patient management.

Keyword: Acute myeloid leukaemia; Leukaemia stem cell; In vitro characteristic; Prognostication